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Parthetria dispar (L.)

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Trap Modification to Accomplish Live Female Baiting of the Male Gypsy Moth

Parthetria dispar (L.) //

by

J. G. R. Tardif¹

Experimental insect pheromones are evaluated in many different ways. Beroza et al. (1971),² have shown field trapping to be one of the best and most natural ways to compare the attractiveness of such a pheromone, disparlure,³ with that of a virgin female gypsy moth. To accomplish the trapping of male gypsy moths, evolutionary changes have been made on trap designs for many years. Presently a widely used survey tool to monitor gypsy moth populations consists of a small weather-resistant paperboard cylinder which is 5.5 cm in diameter and 10.0 cm in length. Equipped with inwardly thrust plastic cone ends with 2.5 cm diameter center holes, and coated on the inner wall with tackifier, the gypsy moth trap is then baited with a small pheromone treated cotton wick to lure and ensnare male gypsy moths.

Beroza et al. (1971),³ in their study, made use of a small restraining female cage placed within Graham Traps.⁴ Although the method worked well to pit females against the candidate pheromone, disparlure, the traps

proved cumbersome. The potential use of this pheromone as a mating confusant created the need for more natural, live female trapping methods and a greater number of effective traps.

Stevens and Beroza (1972)⁵ proved the feasibility of the confusion technique on Cape Cod but male recoveries, using female baited survey traps, throughout the study were low. It was hypothesized that the crowding and unnatural positioning of the female within the trap inhibited her normal behavior. To correct this problem a trap modification was developed to better retain the bait insect. This improvement is capable of being performed on other insect traps.

A virgin female moth has complete freedom of movement, good shelter, and ventilation comparable to the standard wick-baited trap. Tests showed greater recoveries with the newly modified traps while recoveries with other female restraining methods remained low (fig. 1). The female moths are easily accessible for removal and replacement. Fabrication is simple, economical and does not greatly alter the basic trap design.

When considering the constructional details, bear in mind that all measurements used in this particular application are geared to the standard gypsy moth trap

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²Beroza, M., B. A. Bierl, E. F. Knipling and J. G. R. Tardif, 1971. The activity of the gypsy moth sex attractant disparlure vs. that of the live female moth. J. Econ. Entomol. 64: 1527-1529.

³Bierl, B. A., M. Beroza and C. W. Collier, 1970. Potent sex attractant of the gypsy moth, its isolation, identification and synthesis. Science (Washington) 170: 87-9.

⁴Holbrook, R. F., M. Beroza and E. D. Burgess, 1960. Gypsy moth (*Parthetria dispar*) determination with the natural female sex lure. J. Econ. Entomol. 53: 751-6.

⁵Stevens, L. J., Morton Beroza, 1972. Mating inhibition field tests using disparlure, the synthetic gypsy moth sex pheromone. J. Econ. Entomol. 65: 1090-1095.

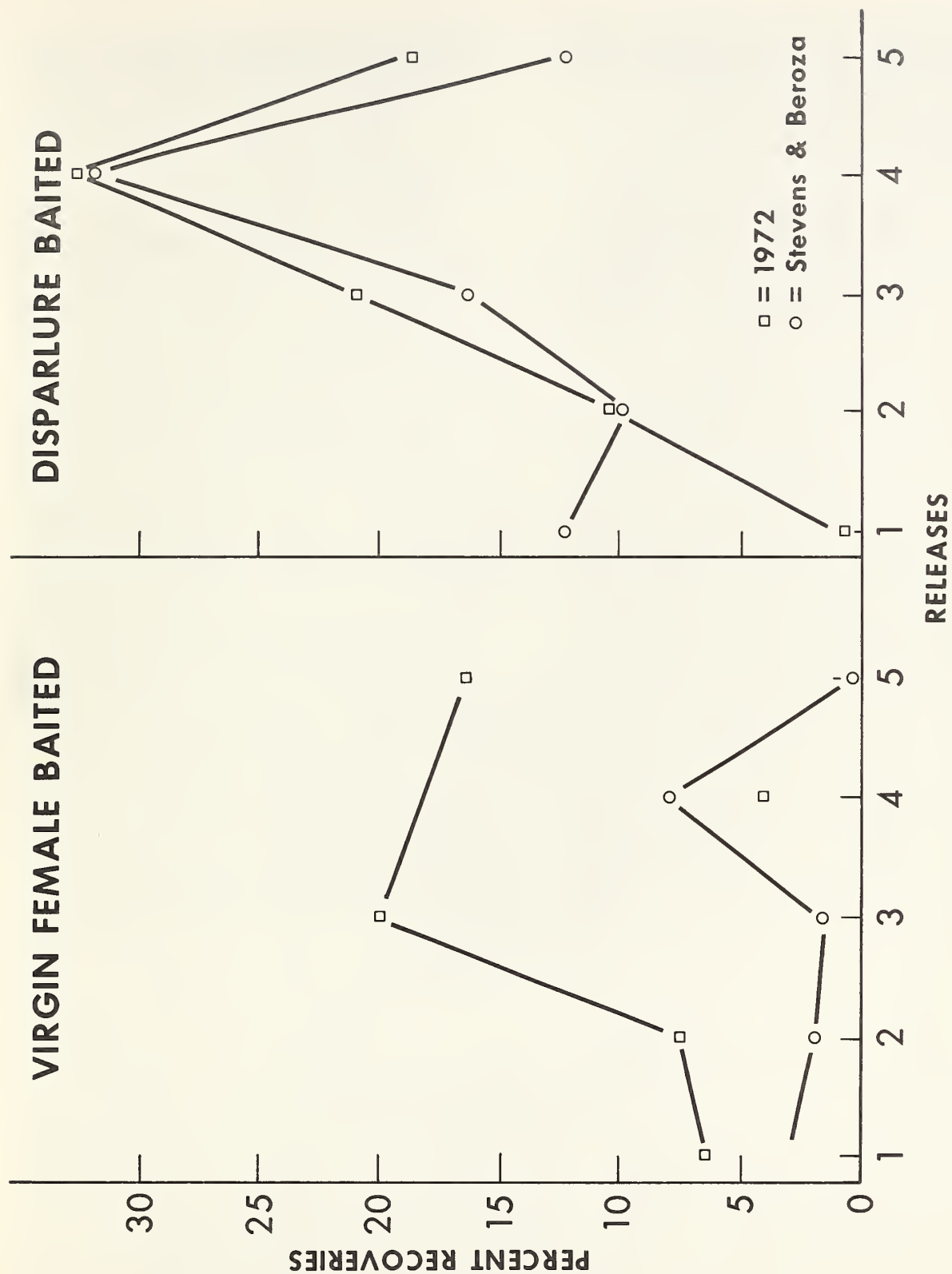


Figure 1.—1972 modified traps vs. that of 1971. Stevens and Beroza used both female baitings and disparture baitings.

and available materials. The purpose of this article is to present a method of modification rather than a specific device, as insect species vary in size. The illustrations and

details are, therefore, only given to serve as a reference for the reader who should allow flexibility in modifying different trap designs.

CONSTRUCTION AND MATERIALS

A 1-ounce clear plastic creamer # P01-13 by Dixie Cup⁶ was modified to have two windows. These openings were produced by passing the creamer over a hot wire cutter⁷ while free handing the dimensions of the cuts (fig. 2).

Next fiberglass window screening⁸ (18 x 16 mesh) was cut to form a partial cone and fastened inside the creamer with a dab of hot glue.

A hole 3.5 cm to 3.8 cm (size is optional) was then cut in the center of the cylindrical trap wall. This can be accomplished with a razor knife, hole punch, or if traps

are metal, with a hole saw. The modified creamer was then inserted bottom first in the hole and oriented so that the windows faced the trap ends. Hot glue was then beaded along the periphery of the creamer to hold and weather-strip the creamer to the trap. A plastic creamer cap was used to close the cage and cone ends, and a wire hanger was fitted to complete the trap. Figure 3 shows a typically modified gypsy moth survey trap.

This same modification was also used successfully on Johnson and Graham gypsy moth traps. Because of the persistent nature of the tackifier (Tack Trap)⁹ it was applied to a removable liner to allow the modified trap to be reused.

⁶Dixie Products, Easton, Penn.

⁷Fisher Scientific, Boston, Mass.

⁸Chicopee Manufacturing Co., Bedford, Ga.

⁹Animal Repellents, Inc., Buffalo, N.Y.

DISCUSSION

In actual use a live virgin female moth is placed in the small cage and easily positions herself as she would on a tree. Once comfortably set, the female insect begins to call, luring males in the area to the trap. Disparlure-treated wicks can also be placed in the cage-equipped traps making possible the testing of live female lure vs.

synthetic materials using the same type of trap. This trap modification has also made possible the rapid exchange of females or synthetic lures in field situations with a minimum of handling. The modification described in this article has greatly enhanced our pheromone program.

Trade names are used in this publication solely for the purpose of providing specific information. Mention of a trade names does not constitute a guarantee or warranty of the product by the U.S. Department of Agriculture or an endorsement by the Department over other products not mentioned.

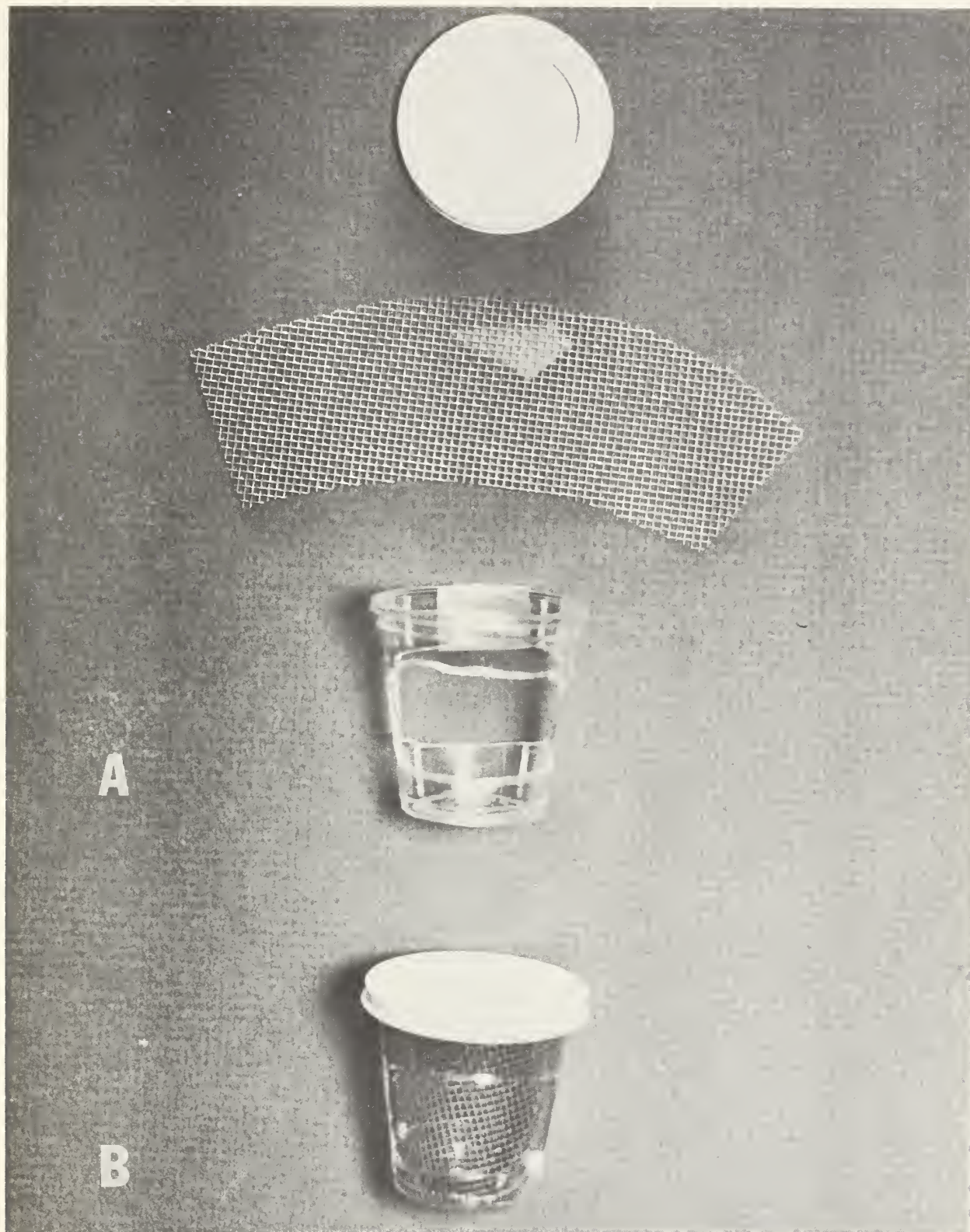


Figure 2.—A, component parts of the female retaining cage; B, fully assembled cage at bottom.



Figure 3.—Typically modified gypsy moth survey trap - A, side and B, front view.

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